

In the Claims

Claim 1 (Currently amended): A method for modulating an immune response, comprising co-administering to a patient:

an effective amount of a nucleic acid sequence encoding p35 and p40 subunits of human IL-12, and an operably linked a promoter sequence operably linked to the nucleic acid sequence encoding the p35 and p40 subunits; and

an effective amount of a nucleic acid sequence encoding human IFN- γ , and an operably linked a promoter sequence operably linked to the nucleic acid sequence encoding human IFN- γ ; and

an antigen such that the co-administering results in an increase of Th1-type cytokine production, an increase of IgG2a-levels specific to the antigen, a decrease of Th2-type cytokine production, and reduced serum IgE-levels.

Claim 2 (Cancel)

Claim 3 (Currently amended): The method of claim 1, wherein the administering step includes selecting the co-administering IL-12 to comprise a p35 subunit and a p40 subunit, results in expression of the p35 and the p40 subunits, the p35 subunit to comprise an comprising the amino acid sequence of SEQ ID NO:8, and the p40 subunit to comprise an comprising the amino acid sequence of SEQ ID NO:10.

Claims 4-5 (Cancelled)

Claim 6 (Currently amended): The method of claim 1, wherein the administering step includes selecting the co-administering IFN- γ results in expression of the human IFN- γ , and wherein the human IFN- γ comprises the to comprise an amino acid sequence of SEQ ID NO:12.

Claim 7 (Currently amended): The method of claim 1, wherein ~~the administering step includes selecting the nucleic acid sequence encoding encoding the p35 and the p40 subunits of the human IL-12 to comprise comprises~~ SEQ ID NO:7 and SEQ ID NO:9.

Claim 8 (Currently amended): The method of claim 1, wherein ~~the administering step includes selecting the nucleic acid sequence encoding encoding the human IFN- γ to comprise comprises~~ SEQ ID NO:11.

Claim 9 (Previously presented): The method of claim 1, wherein the nucleic acid sequences are administered with a pharmaceutically acceptable carrier.

Claim 10 (Cancelled)

Claim 11 (Previously presented): The method of claim 1, wherein the nucleic acid sequences are administered within separate DNA plasmids.

Claim 12 (Previously presented): The method of claim 1, wherein the nucleic acid sequences and promoter sequences are administered within a viral vector.

Claims 13-14 (Cancelled)

Claim 15 (Currently amended): The method of ~~claim 14~~ claim 1, wherein the antigen is selected from the group consisting of a protein, peptide, glycoprotein, carbohydrate, lipid, glycolipid, hapten conjugate, recombinant nucleotides, killed or attenuated organism, toxin, toxoid, and organic molecule.

Claims 16-17 (Cancelled)

Claim 18 (Currently amended): The method of ~~claim 14~~ claim 1, wherein the antigen is administered to the patient with the nucleic acid sequences and a pharmaceutically acceptable carrier.

Claim 19 (Original): The method of claim 1, wherein the patient is human.

Claims 20-42 (Cancelled)

Claim 43 (Currently amended): A method for modulating an immune response, comprising co-administering to a patient:

an effective amount of a plasmid comprising a nucleic acid sequence encoding p35 and p40 subunits of human IL-12, and an operably linked a promoter sequence operably linked to the nucleic acid sequence encoding the p35 and p40 subunits; and

an effective amount of a plasmid comprising a nucleic acid sequence encoding human IFN- γ , and an operably linked a promoter sequence operably linked to the nucleic acid sequence encoding the human IFN- γ ; and

an antigen, such that the co-administering results in an increase of Th1-type cytokine production, an increase of IgG2a levels specific to the antigen, a decrease of Th2-type cytokine production, and reduced serum IgE levels.

Claim 44 (Cancel)

Claim 45 (Currently amended): The method of ~~claim 44~~ claim 43, wherein the administering step includes selecting the antigen to comprise an allergen the antigen comprises an allergen.

Claim 46 (Currently amended): The method of ~~claim 44~~ claim 43, wherein the administering step includes selecting the antigen to comprise the antigen comprises Kentucky blue grass (KBG) allergen extract.

Claim 47 (Currently amended): The method of claim 43, wherein the administering step includes selecting the operably linked promoters to promoter sequences comprise cytomegalovirus (CMV) promoters.

Claim 48 (Currently amended): The method of ~~claim 44~~ claim 43, wherein the administering step includes selecting the antigen to comprise the antigen comprises Kentucky blue grass (KBG) allergen extract, and the operably linked promoters to promoter sequences comprise cytomegalovirus (CMV) promoters.

Claim 49 (Previously presented): The method of claim 43, wherein the patient is human.

Claim 50 (Currently amended): The method of claim 43, wherein the administering step includes selecting the co-administering IL-12 to comprise results in expression of the p35 and the p40 subunits, the p35 subunit comprising the amino acid sequences sequence of SEQ ID NO:8 and SEQ ID NO:10, and the IFN γ to comprise the p40 subunit comprising an the amino acid sequence of SEQ ID NO:12 SEQ ID NO:10.

Claim 51 (Cancelled)

Claim 52 (Previously presented): The method of claim 43, wherein the patient suffers from a condition selected from the group consisting of allergy, allergic rhinitis, atopic dermatitis, asthma, allergic sinusitis, pulmonary fibrosis, and cancer.

Claim 53 (Currently amended): The method of claim 43, further comprising administering an antigen to the patient, wherein the plasmids are administered by a route selected from the group consisting of intramuscularly, orally, and intranasally.

Claim 54 (Currently amended): A pharmaceutical composition comprising a plasmid comprising a nucleic acid sequence encoding p35 and p40 subunits of human IL-12, and an operably

linked a promoter sequence operably linked to the nucleic acid sequence encoding the p35 and p40 subunits;

a plasmid comprising a nucleic acid sequence encoding human IFN-γ and an operably linked a promoter sequence operably linked to the nucleic acid sequence encoding the human IFN-γ;
and a pharmaceutically acceptable carrier.

Claim 55 (Currently amended): The pharmaceutical composition of claim 54, wherein said the composition further comprises an antigen.

Claim 56 (Currently amended): The pharmaceutical composition of claim 55, wherein said the antigen is an allergen.

Claim 57 (Currently amended): The pharmaceutical composition of claim 54, wherein said the nucleic acid sequence encoding the p35 and p40 subunits of the human IL-12-comprises results in expression of the subunits, wherein the subunits comprise the amino acid sequences of SEQ ID NO: 8 and SEQ ID NO:10, and wherein-said the nucleic acid sequence encoding the human IFN-γ comprises the results in expression of the human IFN-γ, wherein the human IFN-γ comprises the amino acid sequence of SEQ ID NO:12.

Claim 58 (Currently amended): The method of claim 1, wherein the nucleic acid sequence encoding the p35 and p40 subunits of the human IL-12 and the nucleic acid sequence encoding the human IFN-γ are administered co-administered to the patient through a mucosal route.

Claim 59 (Cancel)

Claim 60 (Currently amended): The method of claim 1, wherein the nucleic acid sequence encoding the p35 and p40 subunits of the human IL-12 and the nucleic acid sequence encoding the human IFN-γ are administered co-administered to the patient intranasally.

Claim 61 (Cancel)

Claim 62 (Currently amended): The method of claim 43, wherein the plasmids are administered co-administered to the patient through a mucosal route.

Claim 63 (Cancel)

Claim 64 (Currently amended): The method of claim 43, wherein the plasmids are administered co-administered to the patient intranasally.

Claim 65 (Cancel)

Claim 66 (Previously presented): The method of claim 1, wherein the patient suffers from a condition selected from the group consisting of allergy, allergic rhinitis, atopic dermatitis, asthma, allergic sinusitis, pulmonary fibrosis, and cancer.

Claim 67 (Cancel)

Claim 68 (Currently amended): The pharmaceutical composition of ~~claim 54~~ claim 55, wherein ~~said~~ the composition increases Th1-type cytokine production, increases IgG2a specific to the antigen, decreases Th2-type cytokine production, and reduces serum IgE *in vivo*.

Claim 69 (New): The pharmaceutical composition of claim 54, wherein the nucleic acid sequence encoding the p35 and p40 subunits of human IL-12 comprises SEQ ID NO: 7 and SEQ ID NO: 9.

Claim 70 (New): The pharmaceutical composition of claim 54, wherein the nucleic acid sequence encoding human IFN- γ comprises SEQ ID NO: 11.

Claim 71 (New): The method of claim 43, wherein the nucleic acid sequence encoding the p35 and p40 subunits of human IL-12 comprises SEQ ID NO: 7 and SEQ ID NO: 9.

Claim 72 (New): The method of claim 43, wherein the nucleic acid sequence encoding human IFN- γ comprises SEQ ID NO: 11.

Claim 73 (New): The method of claim 1, wherein the nucleic acid sequences are administered by a route selected from the group consisting of intramuscularly, orally, and intranasally.